Washington State
Film Preservation Manual

Low-cost & No-cost Suggestions to Care for Your Film

Prepared for Washington State libraries, museums, historical societies,
and other institutions with film in their collections

Nicolette Bromberg & Hannah Palin
with Libby Burke

Presented by the Washington Preservation Initiative and
the University of Washington Libraries, Special Collections Division

Washington Secretary of State
STATE

UNIVERSITY OF WASHINGTON
Libraries

Table of Contents

Introduction 3

I found motion pictures in my collection—now what? 4

Getting to know your film 7

What do I have? 8

What is happening to my film?—damage and deterioration 15

We are keeping our film—now what? 17

- No-cost film preservation plan 18
- Low-cost film preservation plan 22
- Ideal preservation plan 26

After preservation—access issues 28

Legal and copyright issues 29

- Appendix 1: Questions to ask when inspecting your films 31
- Appendix 2: Moving image holdings survey form 32
- Appendix 3: Date code chart 34
- Appendix 4: Print condition report 35
- Resources and bibliography 36

Introduction

In 2003, the Washington Preservation Initiative awarded the Special Collections Division at the University of Washington Libraries a grant to fund film preservation activities. We used that funding to expand our then two-year old film preservation program by purchasing equipment and supplies to inspect, clean, repair and re-house over 450,000' of film, approximately 600 reels. One of the activities for the grant was to write a manual for museums, historical societies and smaller institutions with film in their collections particularly for those who have little or no experience handling film collections.

In the interim between writing and receiving the WPI grant, the National Film Preservation Foundation published the *Film Preservation Guide*, which covers much of the same information that the *Washington State Film Preservation Manual* was meant to address. We decided, therefore, to write a manual that could be used along with the NFPF *Film Preservation Guide* to deal with issues that confront those who find themselves the caretakers, willingly or otherwise, of collections containing motion picture film.

The result is a manual that considers film preservation from the moment a donor says, "Would you like my home movies, too?" Or when a volunteer brings you a reel of film that was tucked away in the midst of unprocessed manuscript materials and says, "What is *this*?" We feel that caring for film does not have to be intimidating even if you have little or no experience with it. It is our intention to help you address issues inherent in film preservation and to find answers that fit your institution and your collections.

The *Washington State Film Preservation Manual* is a work-in-progress. We hope that you find it to be a useful tool and that it gives you some guidelines for evaluating your film and making some informed decisions about film preservation. Because this manual is still in process we look forward to your input and suggestions. Please feel free to contact us with any questions or ideas you may have that will improve the *Washington State Film Preservation Manual.*

Nicolette Bromberg
Visual Materials Curator
Special Collections Division, University of Washington Libraries
nxb@u.washington.edu

I found motion picture film in my collection—now what?

"The most expensive thing is ignorance."
Snowden Becker, Public Access Coordinator, Academy Film Archives

Issues to consider when making decisions about your film collection

No matter the size of your institution, you must make decisions about whether it is appropriate to accept or maintain film in your collection.

There are two inescapable facts about film:

- Caring for film costs money and takes specific expertise
- Film is messy—describing and handling film can be confusing and time-consuming—films are not always neatly identified like books. You may have an unlabeled can of film, or parts of a film—outtakes, A & B rolls, negative film. You may find yourself with films that were commercially produced and readily available in the marketplace or you may have an irreplaceable, one-of-a-kind home movie. You never know until you dig in and get your hands dirty.

The first and most important decision you will make is whether or not to collect or keep film in your institution. The subject matter in the film may be outside your collection policy or it could be that maintaining moving images is just not appropriate for your organization. If that is the case, look for another institution that might be interested in your moving image materials. This may be stating the obvious, but whatever you do, don't throw away the film. If you need guidance, talk to other archives in your area or go to the Association of Moving Image Archivists website (www.amianet.org) and see if any of their members have suggestions about a new home for your film.

As you consider whether to keep your film, you must ask yourself the following questions:

- Is your institution committed to the care of film materials? Do you have space to keep film? Will it be available to researchers? Will it be cared for properly? How much time or resources can you dedicate to your film collection?
- Are you ready to make informed choices about keeping your films and about what level of work you can devote to them? Is the film that you have clearly part of your collecting scope or would it be better served in another archive? Will this film enhance your collection for your researchers or will it just sit on a shelf?
- Do you have staff or volunteers who can devote time to preservation activities? Can you set up a small low-cost film preservation operation? Are you willing to at least do the "No-Cost" activities that you can to care for your film?
- Are there other options for your film collections? Could you partner with another institution in your area that is more equipped to handle film? Do you have access to potential funding sources? Can you partner with a commercial entity such as a television station that might want to use your film and would reformat it

for you in exchange? Do you or members of your staff have the time to look for grant opportunities on a local, regional or national level? Are you able to develop a funding strategy that will allow your film collections to grow and develop over a period of time?

Making informed decisions: two examples...

At the University of Washington, we put together a small film preservation operation over the course of several years using grant funding, volunteers, and student workers. We were able to purchase equipment (including two freezers for film storage), and hire appropriate personnel. We now can clean, repair and re-house the 16mm, 8mm, and Super 8 films in our collections. We recently began to create online finding aids for our film collections and are adding digitized film clips from our collection to our online site. As a result of these activities, we are in a better position to accept films into our collection than three years ago when we had no active film preservation program. Here is the rationale for two decisions we have made about accepting and handling film in our collections.

1. Collection of nitrate films

We were offered 51 reels of 35mm nitrate film. After a simple inspection of the metal cans and the first few feet of each film, we were able to determine that they were positive film and black and white negative film made in the 1920s in the small town of Aberdeen, Washington. It appeared to be unique newsreel footage of activities in the town and nearby area. A check with the local Aberdeen historical society confirmed that the film footage did not exist in Aberdeen. (The historical society was quite excited to find out about it!) These films fit into our collecting scope both because of their content and because of their unique historic value.

We decided to accept the film, although we did not have the equipment to work with 35mm nitrate because we were interested in making these films accessible to a broader audience. Due to the fact that we have actively been working on film and have cold storage, we felt that we might eventually find a way to preserve and reformat them. Accepting these films would probably not have been a good decision for the Aberdeen historical society because they have no resources to care for film and because of the problems and dangers of nitrate decay. We decided to look to an institution that regularly works with nitrate film for advice.

They offered to clean, repair and re-house our film for free. And as an added bonus, they had an intern working for them, so the many small reels of the collection were put onto several larger reels—something that normally could not be done without payment. Because we had this work done, we were able to apply for and later received a grant from the National Film Preservation Foundation to create a film preservation master copy, release prints and viewing copies. Ultimately, we intend to stream clips from this film online along with a finding aid that describes the material.

This collection would probably not have been appropriate for the Aberdeen Historical Society to take on because it would likely have been a burden on their limited resources and they did not have an active program to care for film. Through our work on the collection, Aberdeen will benefit because they will now have access to film about their community which they have never seen before. This is how the resources of several institutions can be combined to help each other.

2. Native-American educational film collection

A local educational consortium offered a donation of films which included a series of educational films made in the 1970s that were used for teaching about Native American issues. After conducting some preliminary research, we determined that many of the films were available on VHS and DVD from a variety of distribution channels. As a result, we decided to keep a selection of the films for in-house use by students and researchers but not to spend funds on transfer. We are able to provide access to these films because we have acquired a Moviola (pictured right), a film editing machine that can be used to view 16mm films. Therefore, we do not have to spend money to reformat them for public use at this time. Should the films become hard to find, we will have copies available for reformatting at a future time.

Getting to know your film: defining some important terms

There are a few basic terms that give us a frame of reference for discussing how to care for films. These definitions come courtesy of the National Film Preservation Foundation's *Film Preservation Guide.*

- **Preservation**—*Preservation encompasses all of the activities necessary to protect the film and share the content with the public. It embraces the concepts of film handling, duplication, storage and access. Film preservation is not a onetime operation, but an ongoing process. Even duplication must sometimes be repeated as techniques and standards improve.*

- **Conservation**—*Conservation is concerned with protecting the original film artifact from unnecessary handling by storing it under conditions that slow physical decay. Conservation usually entails creating a copy of the original that is then used for exhibition and research.*

- **Duplication**—*Duplication is making a surrogate copy that is both viewable in a form that faithfully replicates its visual and aural content. It is then protected for the future by preservation masters from which subsequent viewing copies can be created. The preservation copy most closely represents the film as it was originally shown.*

- **Restoration**—*Restoration goes beyond the physical copying of the surviving original materials and attempts to reconstruct a specific version of a film and, in some cases, enhancing image and sound to compensate for past damage. Film restoration, unlike art or paper restoration, always involves duplicating the original artifact.*

- **Access**— *Access is the process though which film content is shared with the public. Depending on the institution, access embraces a range of activities, from support of on-site research to exhibition on the Internet. In museums, libraries, and archives, the most common access media at this time are film and video.*

What do I have?

The first and most elemental step in the preservation process is to identify the film in your collection. Several factors go into determining what you have. It is helpful to gather as much information as possible about the physical state of the film. The way **your film is stored** can offer clues as to whether it is a home movie or professional production. **Accompanying information** in the film can, written on the container or on the leader is invaluable for understanding more about your film—production dates, titles, photographers, etc. You will need to find out the **film gauge** (size)—35mm, 16mm, Super 8mm or Regular 8mm. **Edge Codes**, information printed on the edge of the film, also come in handy for identifying an approximate date your film was manufactured. The type of **film stock,** nitrate, acetate, or polyester, will tell you a lot about how to store it. Identifying the type of **film elements** you have— a camera original or a collection of elements that make up a film (negatives, A & B rolls, soundtracks, etc.)— will give you clues as to how the film was shot and what the photographer's intent might have been. And finally, assessing the actual **condition** of the film will give you clear ideas about what actions should be taken next.

You may also have related materials such as shot lists, scripts, press kits, photographs or other documentation relating to the film. These may have important information that will help you to understand the film.

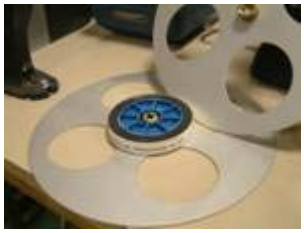
How will I find the film in my collection stored?

Film may be found stored in a variety of different ways.

On a reel

The most common way to find film in your collection is on a reel which is usually made from metal and used for projection. Reels are not intended for long term storage, although film is often inadvertently left on reels for extended periods of time. Continuous storage on reels can damage or stretch out film over time.

On a core



A core is an inert piece of plastic, approximately three inches in diameter. The film is wound around the core for storage and transferred to a split reel for projection and viewing. (A split reel is a film reel that comes apart so that film on a core can be put in the reel between the two parts of the reel.) Film that is on a core should be stored in archival cans or boxes made from plastic, metal or cardboard. If your film comes from an archive or from a filmmaker, you will often find it already on a core. Cores come in several sizes and a large diameter core put less stress on the film.

In a box

Family or individual collections frequently contain home movies. You may find these films in numerous small yellow Kodak boxes. When home movie film was purchased, it often came with a prepaid mailer box to return to the lab for processing. When processed, the original film is converted from negative to positive and returned to the individual. Many people stored their personal film in the original mailer boxes.

In a can

Film is very often found on a reel or core inside a metal or plastic can. Sometimes they are found in square paperboard boxes with straps which may have been used for shipping. Film cans should always be stored flat like pancakes, not upright like books. Films of the same size can be safely stacked several high and should be labeled accordingly. Should you need to reuse old cans make sure that they are thoroughly cleaned. If they display rust or damage, discard them and replace them with new archival cans or boxes.

Unexposed

Unexposed film is milky white and opaque and will probably be found in a box or on a reel. You do not need to keep it.

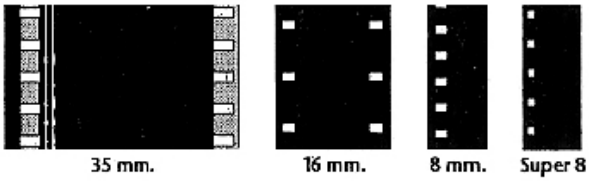
What is footage?

Footage is the length of the film when it is unwound from the reel or core and it is measured in feet. It can be measured with a footage ruler or with a reel that has hatch marks at 200', 400', 600', etc. When ordering archival film cans, the sizes are referred in feet. The cans generally come in 400 ft, 800 ft, 1200 ft, 1600 ft, and 2000 ft sizes.

What is a film gauge?

The film gauge is the measurement of the width of the film stock. Film gauges are measured in millimeters rather than in inches. The most common sizes are 35mm, 16mm, 8mm, and Super 8 mm.

What do film gauges look like?



(Approximate Size)

Thirty-five Millimeter—35mm

Currently used exclusively for commercial theatrical purposes, 35mm has always been the standard for movie studio releases since the dawn of the cinema in the late 1890s. It can be either silent or sound. This format can be found on nitrate, acetate, and polyester film stock. Generally, libraries and archives will not find 35mm films in their collections.

Sixteen Millimeter—16mm

16mm film was introduced in 1923. It was used in both professional and amateur applications and can be either silent or sound. 16mm was used for educational, news or documentary films as well as for home movies. This format is never on nitrate film stock, but is found on acetate and polyester film stock.

Eight Millimeter—8mm

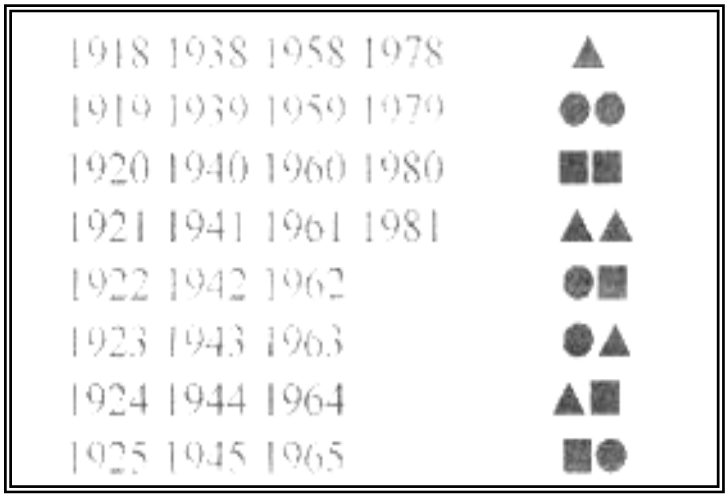
8mm film was introduced in 1932 and became the most popular home movie film. Amateur only, 8mm film is typically silent although there are very rare instances of Regular 8mm film with sound. This type of film might come to a collection along with family papers and photographs and is often found in the original box provided by the lab that processed it. This format is found on acetate film stock.

Super Eight Millimeter—S8mm

Super 8mm film was introduced in 1965 for home movies, and may have a sound track. It was considered a step up from what then became known as “Regular 8” because its sprocket holes are smaller, making the area of the image larger; the image looks brighter and bigger when projected. Super 8mm film can be found on both acetate and, occasionally on polyester film stock.

What is an edge code?

Edge codes are symbols printed on the edge of the film that can help you identify the approximate date of its manufacture. These symbols utilized primarily by Kodak, were repeated every twenty years. For example, a single triangle indicates the film stock was manufactured in either1938, 1958 or 1978. Keep in mind that these dates are approximate and should be used in conjunction with other information such as production records and visual clues such as clothing styles, car models, or architectural landmarks.



An example of edge codes taken from film-center.com

What is film stock?

Film stock refers to the material structure of the film. Film has two layers: a transparent plastic **base** layer supporting the **emulsion** layer that carries the image. Both layers can deteriorate. Over the years, the plastic film base has been composed of cellulose nitrate (35mm, 1893 to the early 1950s), cellulose acetate (35mm, 16mm, Regular and Super 8mm, from 1909 to the present) and polyester (35mm, 16mm and some Super 8mm, Mid-1950s to present).

What is the emulsion?

The emulsion is the layer of photo-sensitive chemicals that forms the image that you see. It sits on the film base which is made of a plastic material. If you look at the emulsion side of black and white film, it appears slightly raised and has a matte finish, whereas the base side is shiny. The two sides of color film are a bit harder to distinguish. There are three layers of dyes (yellow, cyan and magenta) that combine to create the emulsion of color film, which has a little more texture than black and white. Color film changes as the dyes fade.

Film base: What is cellulose nitrate?

From the time motion picture film was introduced in the 1890s up to the early 1950s, film was placed on a base material made from cellulose nitrate. Cellulose nitrate film stock was only made in the 35mm size and will often have the word NITRATE printed on the film edge. The film is 35mm across and has sprocket holes on both sides with a sound track on one side. Nitrate film tends to be unstable and becomes more flammable as it deteriorates. It also burns much hotter than other film stocks and, because it generates its own oxygen, will continue to burn, even if immersed under water. If you have 35mm nitrate, inspect it regularly and store in a cold environment such as a freezer.

Film base: What is cellulose acetate?

Developed as a substitute for nitrate film for safety reasons cellulose acetate film, also known as “safety film,” became available beginning in 1909 when a number of new acetate bases were introduced on the market. Cellulose acetate was used for 16mm and 8mm from their beginnings. Acetate film stock became common in 35mm studio films in the late 1940s. The acetate film stock that was manufactured by Kodak will often have the words SAFETY FILM printed on the film edge. Much of the film found in libraries, historical collections, museums, archives, and personal film collections is made from cellulose acetate. This material is subject to a form of deterioration known as “vinegar syndrome.”

Film base: What is polyester?

Polyester is a very stable and strong film base which was adopted in the mid 1950s. It is used today for 35mm studio release prints shown in theatres, as well as 16mm and some Super 8mm.

What are film elements?

Film can sometimes be complex and confusing because there is often more than one “version” of a film. Frequently, collections that come from a filmmaker are perplexing because they will contain many different film elements mixed together. Film elements are the various components that go into creating a completed film. Some examples are sound tracks, negatives, “A” and “B” rolls, work prints, and projection prints. When you start to work on your film collection, you may find numerous reels of film that all pertain to a single work. They might be the original **negative,** or perhaps **A and B rolls** which are two rolls of negative or positive elements which are used by the filmmaker to hide splices and create fades and dissolves by alternating back and forth between the two rolls. You may also find reels that contain only the **soundtrack** for the film, or **outtakes** (shots that were never used in the final film). You may find **work prints** (the print used to cut and splice the film together), **answer prints** (a print used to check the quality of the production elements before making the final **projection print.**

What is leader?

Leader is unused film that has no image. It is used on the beginning and end of the original film to help protect it from handling damage. It can be a variety of colors—white, black, yellow and red being the most common—and is sometimes used to separate shots or short films on a single roll. It often has the name of the film or other information written on it.

What are negative and print films?

The negative is the film in its original form which is a negative image. The working prints and positive print for projection to an audience are made from the negative. A print is a copy of the film made from the negative. When the print has a sound track added to it is called a “composite print.”

What are A and B rolls?

Collections acquired from filmmakers will often have “A and B” rolls and they can be either negative or positive. These were used to edit the film smoothly. These can be used to reconstruct the final film if the prints have been damaged.

What is reversal film?

Camera reversal means that the same film that runs through the camera comes back from the lab as a positive image. This is similar to a slide in photography. There is no matching negative for the original film which makes it the only copy in existence. It cannot be reconstructed if damaged or destroyed. To identify reversal film and distinguish it from a print, look at the edge of the film. A black edge indicates reversal film while a clear edge means that it is probably a print and was produced from a negative. Most home movies shot on 8mm and Super 8mm, and 16mm are reversal films.

What is a work print?

A work print is made quickly, often without any kind of correction for light or color. It is used to assemble the “rough cut” of a film so that the original film material is preserved while the film is edited. The director and editor of a film often use a work print to determine edit points that, once established, will be transferred to the uncut original.

What is an answer print?

An answer print is the film print that is used as a presentation copy once all the scenes have been checked for quality in the printing and the corrections have been made.

What is a projection print?

The projection print is a film copy created from the master for projection and public access.

What are outtakes?

Outtakes are pieces of film that did not make it into the final edited version. These sections of film are sometimes found within collections held together with masking tape or separated by leader. A collection at the University of Washington refers to these as “take outs.” Outtakes (or take outs) can be reversal or negative film, black and white or color.

Examples of optical sound tracks from filmforever.org

Example of magnetic sound track from filmforever.org

What are sound tracks?

Sound films have a sound track on the film which is used by the projector to “read” the sound as the film plays. Sound tracks found on films are either optical or magnetic. The optical track appears along the edge of the film as a wavy white line or a gray stripe that varies in shade. The sound track is exposed onto the film during printing. The optical track is read as light passes through it, thus the name “optical.” This type of sound track is common among film collections in libraries and archival institutions and can be found as a separate film element or as part of the final print. Magnetic tracks or “mag” tracks are very thin strips of what looks like magnetic audiotape applied to the film. The magnetic track is read by a playback head in the projector during viewing. Magnetic tracks can also be found as a reel of what appears to be blank copper-colored film. The audio track can be detected when the reel is played on piece of equipment capable of playing sound film.

What is happening to my film?—damage and deterioration

There are several ways films may become damaged, and some of these may be evident in your collections. See page 18 of the *NFPF Film Preservation Guide* for a chart that compares the various types of film damage and decay.

Mechanical damage occurs because the film may have been mishandled before it came into your collection by being poorly treated when run through projectors, not cleaned, or if broken, not repaired properly. You may find films that have been "repaired" with masking tape, electrical tape or other non-archival methods. Sprocket holes may be torn and/or stretched due to incorrect projector threading. Films could also have been damaged from improper shipping.

Mold, mildew and fungus damage usually occurs when film is stored in a humid place. You can recognize it by white powdery mold spots on the outside of the film; it will work its way into the film over time. However, moldy film can be cleaned and with proper storage, mold can be eliminated.

Chemical damage occurs when film decays. There are several types of decay you might find in your collection.

Chemical damage—nitrate decay: Nitrate deterioration is a serious problem with film that was uses nitrate as the film base. Nitrate becomes more easily combustible when it begins to deteriorate. If it is kept in high temperatures it can spontaneously combust thus it should not be kept in high temperature locations such as attics or non-air conditioned buildings. It should always be kept in cold storage. The *International Federation of Film Archives* has identified five stages of nitrate degradation which can easily be identified by sight and smell. If you have any nitrate film (35mm only), you should be aware of the symptoms of nitrate decay, which follows this predictable pattern:

The Five Stages of Nitrate Decay

1. Image fading. Brownish discoloration of emulsion. Faint noxious odor.
2. Sticky emulsion. Faint noxious odor.
3. Emulsion softens and blisters with gas bubbles. More pungent odor.
4. Film congeals into a solid mass. Strong noxious odor. Film disintegrates into brownish powder.

—From the *NFPF Film Preservation Guide*

"Generally, once nitrate film reaches the third stage, it cannot be duplicated. Severely deteriorated nitrate film is a hazardous waste and should be transferred to an authorized facility for disposal. Like other forms of chemical film decay, nitrate deterioration cannot be reversed but can be retarded by improving storage conditions. If possible nitrate film should be copied before degradation affects the image." (*NFPF Film Preservation Guide,* p. 16) It is important to consider getting

nitrate film reformatted if possible. The National Film Preservation Foundation offers grants for film preservation. It is one potential source for funding for the preservation of nitrate films.

Chemical damage—acetate decay and vinegar syndrome: Another common type of decay is **acetate decay** or **vinegar syndrome**. A number of environmental factors can contribute to the decay of the plastic base of acetate film including heat and humidity. The film base will begin to shrink which will make the emulsion layer buckle because it cannot fit on the base any longer (since it has not shrunk). The film will begin to smell strongly as the acetate off-gases. The acetic acid that has been released can infect other nearby film which is why deteriorated acetate film must be segregated from other films. The strong acetic acid odor smells like vinegar because it is chemically similar to vinegar. The resulting smell is called "vinegar syndrome" and is the first clue that your film is beginning to deteriorate. This deterioration also follows a predictable pattern as does nitrate deterioration.

Typically the decay process follows this pattern:

1. The film begins to smell like vinegar.
2. The film base begins to shrink. As the base shrinks irregularly, the film resists being laid flat. It curls and warps along both length and width. [See "Shrinkage" below]
3. The film loses flexibility.
4. The emulsion may crack and eventually flake off.
5. White powder may appear along the edges and surface of the film. The acetic acid vapor released by films with vinegar syndrome can infect other acetate base materials stored nearby, particularly in a poorly ventilated storage area

—From the *Film Preservation Guide*

The Image Permanence Institute at the Rochester Institute of Technology has developed a product called *A-D Strips (Film Base Deterioration Monitors)* that are an easy way to check for acetate decay. A strip is placed in a film can or box and left for at least twenty-four hours. It will turn color on a scale from blue (lowest acidity) to yellow (highest acidity). This is one simple way to help monitor your film collection for potential decay.

Shrinkage: is one of the results of acetate decay. If your film has vinegar syndrome, it is important to be able to recognize shrinkage before you try to project your film. Projecting film that suffers from shrinkage will cause further damage to the film. You may want to consider having the film transferred to a video access copy and duplicated onto new film. The original can then be stored.

Color fading: another type of decay, affects the color film in your collections. Color film is made with a combination of dyes, which fade at different rates of time. The symptoms of color fading are shifts in color, loss of contrast and balance, and a washed out look. You may also find film that looks "pink." This is the final stage of color degradation, as the magenta dye is the last one to fade. With camera reversal film or film for which no elements exist outside of the faded print, nothing can be done to reverse the damage.

Importance of storage temperature: One of the major contributors to film deterioration is storage temperature. The warmer the temperature, the faster a film will deteriorate. Color film, for example, is particularly susceptible to fading if kept in heated areas so it is important to store color films in cold temperatures. The Image Permanence Institute publishes The *IPI Storage Guide for Acetate Film* which explains the effect of temperature and humidity on the rate of acetate film base degradation and the *IPI Media Storage Quick Reference Guide* which gives information on how temperature and humidity affect many different types of photographic and film base materials including acetate, nitrate, and glass. The *Media Storage Quick Reference* guide can be downloaded for free from the IPI website. (http://www.imagepermanenceinstitute.org/sub_pages/8page3i.htm) The *NFPF Film Preservation Guide* (pg 60) has a chart, "How Temperatures Affect Film Materials" which has been taken from the IPI media guide.

We are keeping our film—now what?

If you decide to keep or accept film, you will need to do some level of preservation work. There are several methods you can try ranging from **No-Cost Preservation,** to the **Low-Cost Film Preservation Plan** up to the **Ideal Preservation Plan.** We suggest that you obtain the *NFPF Film Preservation Guide* before beginning. The guide can be downloaded from the NFPF site (http://www.filmpreservation.org/) under the "Preservation Basics" section or a book version is available for the cost of postage. Another excellent resource is the *Film Forever* website (http://www.filmforever.org/) which has the *Home Film Preservation Guide,* a very easy to understand site that has guidelines for preserving film. It includes color photographs of film deterioration and the equipment needed for working on film. It gives easy to follow instructions on inspection, handling, cleaning, and repair of films.

No-cost film preservation

If you decide to keep your film, you need to take a few simple steps to understand just exactly what it is that you have. No-Cost Preservation is a simple way to get to know what is in your collection without spending a dime. The University of Washington Special Collections film program began as a "paper project" using the steps outlined below. With the information gathered in this process, we knew what we had in our collection and were able to begin the process of raising funds to preserve it.

1. Create a case file for each film including all of the pertinent information surrounding the collection—donor forms, production records, press releases, etc. Pay careful attention to anything written on the original rusty, dusty metal cans, make a photocopy of any information written on them and include that in the case file, as well. If you have access to new archival cans, usually made of inert plastic, feel free to dispose of the metal cans as they won't be used again. The metal cans trap moisture, can rust and can cause damage to the film.

2. Conduct a physical inspection of your film. This will help you determine the film gauge, whether it is a negative, a print, or reversal film, when the film was manufactured, whether there are opening credits or titles, and whether it has sustained any damage or decay. An easy way to gather information is to view the first few frames of film. All you need is a pair of cotton gloves and a film loupe, a small magnifying glass usually used for inspecting photographs. Consult Chapter 3 of the *NFPF Film Preservation Guide*, "Film Handling and Inspection," for a comprehensive discussion of how to work with your film.
    a. Wash your hands and wear a pair of white cotton gloves.
    b. Clean your work area to make sure it is free of dust and debris.
    c. Unroll a few feet of film and look at the leader to see if anything is written there.
    d. Unroll a few feet more, hold it up to the light or put it on a light table. Using a photographic loupe, see if there might be a title or production credits at the beginning of the film. (Make sure to hold the film by the edges and don't put your fingers on the film itself.)
    e. Inspect the edge of the film by the sprocket holes for date codes

f. Smell the film to see if there is any odor. Acetate and nitrate decay have very specific smells but be cautious about inhaling too deeply.

g. Do a little bit of research into the production of your film. Books, articles and web sites about the filmmaker and the subjects, events and places depicted in those first few feet of film can provide clues to the historical significance of your film. The Internet Movie Database, www.imdb.com, and the Prelinger Archives, www.archive.org/movies/prelinger.php, are wonderful places to search for information about feature films, documentaries and educational films.

3. Record the data you've gathered about the film onto a form for the case file. We developed a Film Survey Worksheet to record information gathered from the film and whatever else we could determine about the film without actually viewing it. We have also found the Print Condition Report from the *NFPF Film Preservation Guide* to be an indispensable tool for collecting information about the physical condition of the film. (To download a copy of the Print Condition Report go to www.filmpreservation.org/preservation/pcr_blank.pdf)

4. Create a simple database using the information you've discovered about your film.

5. Store the film flat on shelves and consider freezing anything that may be deteriorating. Consult the *Film Forever* website, Chapter 8, Section 8.2 (www.filmforever.org) for very useful step-by-step instructions on how to freeze films. Do not store your films in warm areas such as attics or near heating. Also do not store them near any source of humidity such as water pipes, sprinklers, radiators, etc. or in basements where there are high humidity levels. Avoid storing them near any source of chemical fumes or potential pollutants.

6. Try to store same sized films on top of each other so that the weight is distributed evenly. If possible store the films in cans rather than loose. You can store several small reels of film in one larger film can. If any films show signs of decay such as vinegar syndrome, store them away from the other films and near ventilation sources.

7. Check to see if another institution in your area might be interested in collaborating to help save the film.

8. Report deteriorating film to your institution officials to see if they might have funds for transfer.

9. Locate an interested donor, patron or researcher who would be willing to donate equipment or financial assistance to the preservation process or identify potential grant sources to fund a preservation project.

10. Join the Association of Moving Image Archivists listserv (http://www.amianet.org/amial/amial.html) to get access to others who have film collections. List members are always willing to answer questions and give suggestions. Attend the annual conference of the *Association of Moving Image Archivists*. Each conference is an opportunity to learn more about the field of moving image preservation and a chance to meet colleagues who can help answer every conceivable question that may arise for you.

The next step…low-cost film preservation plan

Once you identify what is in your film collection, the next step is to take simple actions to preserve it. At this point, you can consider setting up a film preservation station in your archives. You will need to purchase basic equipment and supplies that will enable you to view, clean, repair, and store your film properly. Currently, this equipment is relatively easy to find and inexpensive to buy. The wonderful thing about film equipment is that it is old-fashioned with movable mechanical parts that can be comparatively easy to repair or replace.

Ideally, you will need to set up an area dedicated to film inspection and preservation activities. We started our film preservation program at the University of Washington with a small grant. In the beginning, the only space available was in a cubicle shared with the copy machine. It wasn't ideal, but it worked. We set up a 5 foot long table and some shelving. Since 16mm was the predominant format in our collection we purchased equipment to work with 16mm film—rewinds, reels, splicer, and a Moviscop (a tabletop viewer that allows you to look at film without projecting it) — for approximately $2,100. That same grant allowed us to buy archival cores (plastic hubs the film is wound around), and archival "vented" cans to store the films we'd cleaned and repaired. We purchased frost-free freezers for storage of unstable materials. A later grant paid for more equipment and supplies to work with the 8mm and Super 8mm film in our collection at a cost of about $1,200. Having all of this equipment on hand allowed us to provide access to researchers without having to incur the costs of a film-to-video transfer.

Some equipment can be purchased through dealers, but you can also look for it in unconventional places. We were fortunate to have a Moviola donated to us from another university department. Your local university may have a surplus store on campus where old equipment is sold for very reasonable prices. Get in touch with the film or communications department at your local university or public school system. They may be willing to part with some of equipment that is no longer in use. You may be able to find old film equipment at garage sales, estate sales, on eBay or in thrift stores.

Low-cost film preservation

1. Continue steps undertaken in the No-Cost Preservation plan outlined above.
2. Obtain a copy of the National Film Preservation Foundation's *Film Preservation Guide* (www.filmpreservation.org). It can be downloaded from the website or you can order a free copy from the National Film Preservation Foundation, 870 Market Street, Suite 1113, San Francisco, California, 94102. Include $8 to cover the cost of shipping. In addition, visit the Film Forever Website (www.filmforever.org).
3. Set up a film preservation station—you can set up a basic or an elaborate film inspection station in your institution depending on your circumstances. You will need some basic equipment that can be purchased from vendors listed in Appendix D of the *NFPF' Film Preservation Guide.* For a thorough discussion of film equipment, go to Chapter Three, Section 3.7 of the *Film Preservation Guide*. This includes a chart on page 33 that takes a look at equipment for a variety of budgets.
    a. You will need rewinds, split reels, take up reels and a viewer to look at your film. Each format—16mm, 8mm and Super 8mm—requires its own set of equipment. Sometimes 8mm and Super 8mm are dual use.
    b. You will need a film cleaning system. We use Renovex II cleaning fluid with an Ecco Brand film cleaning applicator that uses a lint free cleaning cloth, but there are other options including particle rollers or hand cleaning. See the *NFPF Film Preservation* Guide for a discussion about cleaning film. Always be sure to work in a ventilated area.

    c. An indispensible piece of equipment in any archive is a splicer, used to join two pieces of film together. Each format requires its own splicer. There are several different styles—some use tape, some use heat, others use cement, and, the top of the line uses an ultrasonic technique that bonds the molecules together. A discussion of splicers and how to use them can be found in the *NFPF Film Preservation Guide*. A tape splicer works for all film bases, is easy to learn and to use, and is reversible. The disadvantage to the tape method is that, as tape ages, it can leave a residue on the film. Cement creates a more permanent splice

but cements currently on the market do not work with polyester film. Ultrasonic splicers only work with polyester film and cost several thousand dollars. Do some investigating as to which technique will work the best for you.

d. You will need to wind your film onto inert plastic film cores using rewinds and split reels.

e. Film should be stored in archival vented inert plastic cans. Purchase these in a variety of sizes measured by footage (200', 400', etc.)

f. Obtain A-D Strips to help you test acetate film for vinegar syndrome and molecular sieves to help abate vinegar syndrome if detected.

g. Don't forget to label everything! Label the top and the edge of your film cans and write information on the film leader.

h. There are some additional materials that are indispensable at any film inspection station:
   - White cotton gloves for handling and inspecting film
   - Loupe and small light box if available for reading single frames of film
   - Archival film tape for keeping the leader attached to the reel and core
   - White double perforated leader for all gauges in your collection

4. Once you've set up your film inspection station, you can now start to inspect, clean, repair and re-house selected films. Cleaning your film is a wonderful opportunity to assess its condition and to gather invaluable information that can be used in a variety of ways. Go to Chapter 3, "Film Handling and Inspection," in the *NFPF Film Preservation Guide* beginning with Section 3.2 through Section 3.6. Also visit the *Film Forever* website and look at Chapter 4, Inspection, Cleaning and Repair, for instructions on working with your film.

5. Some basic guidelines taken from the *NFPF Film Preservation Guide*:
    a. Always handle film with white cotton lint-free gloves, just as you would a photograph or photographic negative. However, damaged perforations and splices may snag cotton fabric. If it becomes necessary to remove your gloves while handling damaged film, hold the film along the edges and never touch the sound track or image.

    b. Work on an uncluttered table in a well-lit and ventilated area
    c. Clean your work table and area before starting because film easily picks up dirt and dust
    d. Wipe metal equipment with a cleaner that does not leave a residue. Rinse plastic tools and counters with distilled water.
    e. Do not run your film through a projector, tempting though it may be. Use a viewer such as a Moviscop or a Moviola to look at your film. A Moviscop is a small tabletop film viewer that sits between a set of rewinds and can be used for 8mm and 16mm (see the photograph above). A Moviola is a much larger freestanding machine used for editing the sound and visual elements of a film. The terms “Moviscop” and “Moviola” are taken from the name of their manufacturers.
6. Establish archival storage conditions. Film needs to be stored in a cool, dry environment and film cans should always be stored flat like a pancake. Cold and dry storage is the single most important factor in preserving your film. Depending upon the size of your collection, you might want to consider purchasing a frost-free refrigerator for storage. See the *NFPF Film Preservation Guide* for a detailed discussion of appropriate storage conditions in Chapter 6. If you feel that your film is in an advanced state of acetate decay, the *Film Forever* website (www.filmforever.org) has a very useful step-by-step section on how to freeze films in Chapter 8, Section 8.2.
7. Consider sending your film to a professional film lab that will clean your film ultrasonically, as an alternative to doing the work in-house. The advantage is that the process is far better than the cleaning you might be able to do at your film preservation station. However, the cost is based on a per-hour charge and can range into the hundreds of dollars per film.
8. Address access issues—A great way to provide access without running up a huge bill at your local film lab is to utilize film viewing equipment in-house. For example, both the Moviscop (a tabletop film viewer) and Moviola (a freestanding editing machine) can be used to show films to researchers who are interested in viewing the film, but are not ready to order a video transfer of the work. Investigate the

possibility that someone might be willing to give you a used Moviola or see if you might be able to find one cheaply. (Do not project your film.) Consider reformatting your films to make access copies that can be viewed by researchers and patrons. You might want to reformat on an as-needed basis with the researcher paying for the film transfer, just as they would when ordering a copy of a photograph from an archive. You would retain the master copy which must be made before creating the access copy. Create online finding aids or databases to publicize your collection. Consider taking part in Home Movie Day, an international event started in 2003 to celebrate home movies and amateur films (www.homemovieday.com), it is a good way to let people know about your collection (if it contains home movies) and to let your community of your interest in films.

The ideal preservation plan

The ideal preservation plan embraces all the techniques listed above but adds the component of reformatting. Reformatting is done for two reasons: access and preservation.

- **Reformatting for access**—means creating copies on video or digital formats to be used by researchers. These access copies help avoid any further wear on the original film.

- **Reformatting for preservation**—creates a new film master, viewing print and access copies. In both instances, the original film is put in cold, dry storage to slow deterioration. Reformatting is especially important if the original film is deteriorating due to acetate or nitrate decay.

As you begin to think about reformatting the films in your collection, a good rule to follow is "do no harm." The process of duplicating your films should leave them in the same, if not better condition than when you started. Avoid the projection of any original film materials whenever possible, because projection can harm the film and once original material is damaged, it cannot be replaced.

Reformatting for Access

Reformatting can be done in a variety of formats based on your budget or funding. The transfers may be done by film technicians or archivists depending on the method. General costs are based on the amount of work to be done.

It should be noted that videotape and DVD are not permanent media. Access copies are for research use and not intended for preservation. Videotape is subject to degradation and decay as well as mechanical obsolescence. (Over one hundred videotape formats have been introduced onto the market since the 1950s, but most archives are only have machines that can play one or two formats.) DVDs, while touted by manufacturers as lasting for decades, are already showing signs of deterioration. Any information transferred to these media will have to be migrated to another format at some point in the future. Transferring your film holdings to videotape or DVD should be regarded as a way to provide access to the images, not a way to preserve them.

Access copies can raise problems of record-keeping. You will need to establish a numbering and labeling system so that the originals and masters are linked. Make sure that each film can, VHS tape and DVD is labeled with an id number and name of your archive.

The *NFPF Film Preservation Guide* has a comprehensive chapter on duplication including how to deal with film labs, shipping film, and questions to ask a prospective lab before engaging their services. The reformatting process can be intimidating and learning the language of commercial film laboratories can be a challenge. The most important thing to remember is to ask questions if you are unfamiliar with the procedures. The project manager at the lab should address your concerns and answer your questions. If they don't, move on and find someone who will! There are wonderful labs out there that are willing and eager to work with you and help you find the best options for your film.

Another option to consider is that there are film transfer systems available on the market that could be purchased for use in-house. The advantage is that, as an institution, you have control over the film transfer and have a hand in the final product. You can offer transfers in exchange for donated films, a plus when wooing the donor of a large home movie collection. You also incur expenses up front in the purchase of the equipment. You will also need to train or find qualified staff to run and maintain the equipment. The quality of this type of transfer will not be as high as that of one done by a lab, but it will give you greater access and flexibility.

Methods of reformatting for access

Film-to-video—having the original transferred to a videotape master that can be any one of a variety of broadcast quality formats, such as Digibeta or BetaSP. Some labs can create a transfer master onto digital videotape formats like DV-Cam or Mini-DV. Regardless of the format, the master is then used to make DVD or VHS access copies. Film-to-video can be achieved through two methods:

1. Wet gate transfer—the film is run through a machine that does not engage the sprockets. Companies that use this technique will usually ultrasonically clean the film before it is transferred. The drawback to this method is that is can be quite expensive.
2. Film chain transfer –uses a projector to send the image through a series of mirrors and suspends the image in front of a camera. It is less expensive and should only be considered if the company is reputable and used to dealing with archival materials. This technique was very popular in the 1980s with the advent of videotape and is not always performed with care. It is, however, a great way to get a lot of film transferred for a relatively small amount of money. This is a technique that is most often used with small gauge film like 8mm and Super 8mm.

Reformatting for Preservation

The only true method of preserving film is to create a new master onto film stock. The process is quite expensive and is prohibitive for the majority of films found in small collections. Creating a preservation master from which subsequent projection and access copies are made, is the only way to protect the quality and content of the original film.

Method of reformatting for preservation

Film-to-film—involves copying the film onto new polyester stock, which can then be used to strike additional prints, thus preserving the original film. This is by far the most expensive method of reformatting, but it also provides the highest level of preservation. Grants given by the National Film Preservation Foundation are for film-to-film transfer and usually include the creation of an additional format such as digital that is used for access.

After preservation—access issues

Providing access to your film is usually the ultimate goal of any preservation program. Once you've embarked on the road to preserving your films, you need to ask yourself a few pertinent questions regarding how you will handle access to the films. Are you ready for the public? If you start to make your collections more accessible, you also have to make sure that you have the manpower to handle reference, viewing requests, and transfer orders. Make sure you have procedures and forms ready to deal with research requests and film orders (if you are going to provide copies of them). Identify what labs in your area will do your transfer work and get to know the staff at those labs.

- Once your film or (viewing copy) is ready for researchers how will you provide access to it?

- Do you have a comfortable place for patrons to view the films or the access copies?
- Are your films in good enough condition to be viewed by researchers? Do basic repairs such as splicing and cleaning before using and make sure that there is a staff person available at all times to deal with the inevitable broken splice or torn sprocket.
- Equipment—do you have equipment for researchers to view your film or reformatted version (DVD, VHS, etc)? At minimum you can provide access to film through winds and a Moviscop (operated by someone who knows how to run it). Or you might obtain a Moviola or Steinbeck flat-bed film editing machine for viewing 16 mm film. Or perhaps you can find another institution or a local company or TV station that might allow viewing on their machines
- How will you let others know you have films?—Can you publicize your collection in your community?
    - Make sure researchers know the materials exist—be sure to include film in finding aids, inventories, or databases of your collections. Try to view the film, if possible, before describing it in a finding aid. At minimum, look for titles or other information on the reel itself, rather than just what might be written on a film can.
    - Let other archives know you have film in your collection, they can refer potential researchers to your collection.
    - Put articles in the newspaper about interesting films in your collections.
    - Attend local history conferences, talk with researchers, and connect with the historical societies in your area.
    - Consider participating in *Home Movie Day*, an international celebration of home movies and amateur film. The public is invited to bring their films to be projected on the "big screen" for all to see in venues all over the world on the second Saturday in August. *Home Movie Day* is an opportunity to reach out to the community and educate them about preservation issues and the importance of saving our film heritage. A side benefit of Home Movie Day is

that it often brings attention, films, equipment and expertise to your doorstep. To learn more, go to www.homemovieday.com.

Legal and copyright issues

When you are ready to open your collection to researchers, you will also need to be aware of legal issues relating to film collections. The most obvious legal issue is to confirm that the films you are offered actually belong to the donor and that the donor has signed a donor agreement or deed of gift which confirms that they agree to transfer their rights in the film to your institution.

If you make access copies of your films be sure that you have included a statement of ownership and copyright disclaimer in the research copy that will appear before the film begins so anyone using the access copy video or DVD will know that the film belongs to your collection. The viewer will then know where the footage originated, who owns it and who to contact if they want to use it. Here is an example of the notice we add to the beginning of all of the Special Collections' reproduction copies.

> Bob Wafenschmidt Personal Films
> Acc. No. 94-4
> VHS No. 15
> 43 minutes
>
> This video copy is issued by the University of Washington Libraries. Use of the images contained herein requires written permission from Special Collections. The images contained herein may not be sold, redistributed, copied or distributed as a film, video, photograph, electronic file or other media, without permission.
>
> Please credit: University of Washington, Special Collections
>
> Return to: Special Collections, University of Washington Libraries, Box 352900, Seattle, WA 98195-2900

Rights issues are complex and should be addressed if the film is going to be used outside your institution. Once you have a signed donor form for the film, you have ***physical*** rights to the film. You own the film and can determine how it will be handled, viewed and copied. You do not necessarily own the ***copyright*** (or intellectual rights) to the film however unless those rights were included in the donation. The person or company who created the film owns the copyright to the film. For home movies, this can be fairly simple. If the person who made the film (or their heirs) donates the film and any rights they own in the film then your institution owns both the physical rights and the copyright to the film. The copyright holder for films that were made by production companies can sometimes be difficult to determine if the company was

bought out or no longer exists. You can start looking for information about who might hold the copyright at the Internet Movie Database (www.imdb.com) and the Prelinger Archives (www.archive.org/movies/prelinger.php).

When the copyright to a film has expired, then the film is considered to be ***in the public domain.*** This means that if you have a film in your collection which is no longer covered by copyright, you are free to use it without the previous copyright holder's permission. It does NOT mean that someone can come and freely use a film in your collection without abiding by your institution's rules—you own the physical rights to the film and can control its use. Thus, if you have a film in the public domain, you can still charge a use fee if a filmmaker wishes to use it in their production or require that the filmmaker must follow the rules of your institution. Copyright terms—the length of time that a work is covered by copyright, is a very complex issue because of a number of recent changes to copyright laws.

A good resource on copyright terms is *Copyright Term and the Public Domain in the United States* by Peter Hirtle (www.copyright.cornell.edu/training/Hirtle_Public_Domain.htm). It has a chart covering the type of work, the copyright term, and the date a work falls into the public domain in the United States. The current version also contains information on copyright outside of the US. It is also possible to search the archives of the Association of Moving Image Archivists listserv for past discussions on copyright issues in relation to moving images (www.amianet.org/amial/amial.html).

End note

Dealing with film may seem intimidating at first, but our hope is that this manual will be the first step in demystifying the preservation process. We also hope that the Washington State Film Preservation Manual will encourage other institutions to consider actively working to preserve their collections.

APPENDIX 1

QUESTIONS TO ASK WHEN INSPECTING YOUR FILMS

Following are some questions to guide your inspection developed by the National Film Preservation Foundation and included in the *NFPF Film Preservation Guide.* These can be easily turned into a worksheet or form to use while working on your film collection.

1. How long is the film?
2. What is the gauge?
3. What is the film base?
4. Is the name of the manufacturer printed along the edge? Are there edge codes that might help with identification and dating?
5. Is the film color or black and white? If color, des it display some degree of fading?
6. Is it silent or sound?
7. If sound, what type of sound track does it have?
8. Is it positive, negative or reversal film?
9. Does it have a title or credits?
10. How much mechanical damage exists in terms of splices, scratches, and broken sprocket holes? How many feet from the start does the damage occur?
11. What is the degree of shrinkage as measured by a shrinkage gauge or by comparing it to fresh film stock?
12. Is there observable mold? Has the growth caused lasting damage?
13. Does the film smell of vinegar?
14. Are there other signs of decay or damage?

APPENDIX 2

UW SPECIAL COLLECTIONS MOVING IMAGE HOLDINGS SURVEY FORM

Date___/___/___

Film Item

1. Collection Name: _____
2. Accession #: _____
3. Reel #: _____
4. Title/Main Entry: _____
5. Location (shelf): _____
6. Date: _____
7. Subject(s): _____
8. Estimated footage: _____
9. BW / Color: _____

10. Film Gauge:
    a. 8mm (film)
    b. Super 8mm (film)
    c. 16mm (film)
    d. 35mm (film)

11. Reel Info (circle):
    a. On/In Container
    b. None

12. Condition/Quality (circle):
    a. OK
    b. Vinegar
    c. Shrinkage
    d. Broken
    e. Other: _____
    f. Comment: _____

13. Work Completed (circle)
    a. Cleaned
    b. Viewed
    c. Cored
    d. Canned
    e. Labeled

UW SPECIAL COLLECTIONS MOVING IMAGE HOLDINGS SURVEY FORM, Page 2

Detail:

14. Opening Credits: _____

15. Closing Credits: _____

Synopsis: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Comments: _____

_____

_____

Prepared by:_____

MSCUA survey: film item level. Rev. 7/26/02

APPENDIX 3

DATE CODE CHART

This chart was taken from the *NFPF Film Preservation Guide* and was adapted from a design by Lauren Jones-Joseph at Sabucat Productions.

.

| EASTMAN KODAK DATE CODE CHART | | |

APPENDIX 4

PRINT CONDITION REPORT

The Print Condition Report is taken from the *NFPF Film Preservation Guide*.

PRINT CONDITION REPORT

Collection/Title:

Length:

Black & White _____ **Color** _____

Silent _____ **Sound** _____

Gauge:

Material: ____ Triacetate ____ Diacetate ____ Polyester

Generation: ____ Positive ____ Reversal

____ Fine Grain ____ Soundtrack Only ____ Image Only

Language/Head Titles/Intertitles/Subtitles:

PHYSICAL DAMAGE

Marked on a scale of 1 (slight) to 4 (heavy)

_____ Emulsion Scratches	_____ Projector Oil & Dirt
_____ Base Scatches	_____ Warpage
_____ Perforation Damage	_____ Shrinkage
_____ Edge/Perforation Repair	_____ Color Fading

Number of Splices:

Vinegar Syndrome (Acetate Decomposition Level)* ____

*Marked on a scale of 0 (no deterioration) to 3 (critical)

Notes:

Completed by _____ **Date** _____

RESOURCES AND BIBLIOGRAPHY

Association of Moving Image Archivists
http://www.amianet.org/publication/resources/guidelines/guidelines.html

National Film Preservation Foundation
http://www.filmpreservation.org

Film Forever
http://www.filmforever.org

National Television & Video Preservation Foundation
http://www.ntvpf.tv/html/preservation/resources.html

AMIA Storage Standards and Guidelines for Film and Videotape Fact Sheet
http://www.amianet.org/publication/resources/guidelines/storage/intro.html

Adelstein, Peter Z. *IPI Media Storage Quick Reference*. Rochester, NY: Image Permanence Institute, Rochester Institute of Technology, 2004.
http://www.climatenotebook.org/MSQR/MSQR_home.html

AMIA Cataloging and Documentation Committee. *AMIA Compendium of Moving Image Cataloging Practice*. Edited by Abigail Leab Martin. Beverly Hills, CA: Association of Moving Image Archivists; Chicago: Society of American Archivists, 2001.
Available from the Society of American Archivists (www.archivists.org)

AMIM Revision Committee and Motion Picture, Broadcasting, and Recorded Sound Division. *Archival Moving Image Materials: A Cataloging Manual*. 2nd ed. Washington, D.C.: Cataloging Distribution Service, Library of Congress, 2000.

Blasko, Edward, Benjamin A. Luccitti, and Susan F. Morris, eds. *The Book of Film Care*. 2nd ed. Kodak Pub. H-23. Rochester, NY: Eastman Kodak Company, 1992.

Davidson, Steven, and Gregory Lukow, eds. *The Administration of Television Newsfilm and Videotape Collections: A Curatorial Manual*. Los Angeles: American Film Institute; Miami: Louis Wolfson II Media History Center, 1997.
Copies can be ordered from the Florida Moving Image Archive, 305-375-4527 and through the Society of American Archivists web site (http://www.archivists.org/catalog/).

Gracy, Karen F. “Documenting the Process of Film Preservation.” *Moving Image* 3 (Spring 2003): 1–41.

Kattelle, Alan D. *Home Movies: A History of the American Industry, 1897–1979*.

Nashua, NH: Transition Publishing, 2000.

IPI Storage Guide for Acetate Film: Instructions for Using the Wheel, Graphs, and Tables. Rochester, NY: Image Permanence Institute, Rochester Institute of Technology, 1993.

Smither, Roger and Surowiec*, Catherine A., eds. This Film is Dangerous: A Celebration of Nitrate* FIAF (Fédération Internationale des Archives du Film), London: United Kingdom, 2002.